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Indian Standard

SPECIFICATION FOR FINE SILVER BAR, SHEET, WIRE, GRANULES AND TOKEN

(*First Revision*)

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Indian Standard

SPECIFICATION FOR FINE SILVER BAR, SHEET, WIRE, GRANULES AND TOKEN

(First Revision)

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Indian Standard

SPECIFICATION FOR FINE SILVER BAR, SHEET, WIRE, GRANULES AND TOKEN

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 18 January 1980, after the draft finalized by the Precious Metals Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1963. In this revision, the following main modifications have been made:

a) The definition of silver is modified,

b) Composition limits of fine silver grades are included,

c) Methods of sampling are included,

d) A clause on manufacture has been added,

e) The clause on weights have been reviewed, and

f) Requirements covered in IS : 5320-1969* have now been incorporated in this revision.

0.2.1 This standard supersedes IS : 5320-1969*.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Specification for fine silver ingot.

†Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements of fine silver in the form of bar, sheet, wire, granules and token. It, however, does not cover wires for electrical contacts.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Silver — The metallic element silver, free from any other element.

2.2 Fine Silver — Silver containing metallic element silver 999 parts and over in 1 000 parts.

2.3 Silver Alloy — An alloy of silver with one or more other elements.

2.4 Fineness — The silver content expressed in parts per thousand.

2.5 Bar — A regular shaped ingot, narrow in width when compared to its length, and made by casting in a metal mould.

2.6 Sheet — Material in flat form obtained by rolling and of uniform width and thickness. It may be coiled to facilitate handling.

2.7 Wire — Material usually in round form with uniform cross section throughout. It may also be square, rectangular, or other cross-sectional form in special cases. Wire is obtained by drawing through dies and its diameter generally does not exceed 5 mm.

2.8 Granules — Grains or shots in the form of loose particles obtained by pouring molten metal into water.

2.9 Token — A small flat silver disc of regular shape which has inscribed on it the name and/or registered mark of the maker, the weight and the fineness.

3. SUPPLY OF MATERIAL

3.1 General requirements relating to supply of material are laid down in IS : 1387-1967*.

4. MANUFACTURE

4.1 Silver shall be produced by well-recognized and accepted processes of refining.

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*General requirements for the supply of metallurgical materials (*first revision*).

4.2 The surface of the material shall exhibit quality generally acceptable in the trade.

4.3 The producer shall use care to supply silver of as uniform quality as possible in each delivery.

5. CHEMICAL COMPOSITION

5.1 Fine silver shall conform to the requirements of chemical composition as prescribed in Table 1. In order to ascertain the purity of silver, methods of assaying as given in IS : 2113-1972* may be employed. Impurities may be determined by method given in IS : 8858-1978† or by methods agreed between the supplier and the purchaser.

TABLE 1 CHEMICAL COMPOSITION OF FINE SILVER INGOT

Grade	Requirement, Percent						
	Ag *Min*	Cu *Max*	Pb *Max*	Fe *Max*	Bi *Max*	Pt + Pd *Max*	Se + Te *Max*
9999	99·99	0·010	0·001	0·001	0·0005	0·001	0·001
9995	99·95	0·04	0·015	0·002	0·001	—	—
999	99·90	0·08	0·015	0·002	0·001	—	—

NOTE 1 — While calculating the purity of refined silver by difference, oxygen should be considered as silver.

NOTE 2 — Limits of impurities other than those listed above may be agreed between the supplier and the purchaser.

6. PHYSICAL CHARACTERISTICS

6.1 Fine silver shall be in the form of bar, sheet, wire, granules or token. It may also be supplied in the form of plates or rods. Shapes and sizes of these forms shall be subject to agreement between the purchaser and the supplier.

6.2 Bar shall be cast by a single pouring and shall be clean, free from slag, blow holes, blisters, cuts, etc.

6.3 Sheets shall be clean, free from blow holes, blisters or flakings.

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*Methods for assaying of silver in silver and silver alloys (*first revision*).

†Method for spectrographic analysis of fine silver ingot (Grades 9999 and 999).

6.4 Wire shall be free from kinks, scratches, die-marks or any other mechanical defects.

6.4.1 Dimensions and mechanical properties such as tensile strength, hardness, etc, for wires shall be agreed between the supplier and the purchaser.

6.5 The granules shall be clean, bright and free from dirt.

6.6 Weights of silver bar, sheet, wire, granules and token shall preferably be as follows:

Grams: 1, 2, 5, 10, 20, 50, 100, 200 and 500

Kilograms: 1, 2, 5, 10, 28 to 32.

7. TOLERANCE ON WEIGHTS

7.1 No negative tolerance shall be allowed on the weights marked on the bar, sheet, and token or the weights marked on the containers of wires and granules.

7.2 No negative tolerance on the fineness shall be permitted.

8. SAMPLING

8.1 Lot — A single melt shall constitute a lot for sampling.

8.2 The value of this material is such that special attention shall be paid to the sampling procedures. If the purchaser and the seller agree that samples most representative of the assay value of a melt are required, the dip samples should be taken from the silver melt as it is ready for pouring into moulds. The samples should consist of granules or cast button.

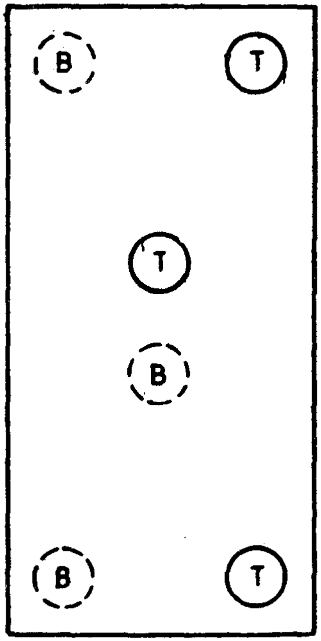
8.3 For bars, the sampling should be preferably by drilling. This should be done by a procedure that will avoid errors due to segregation within the ingots and, in addition, performed in such a manner that the surface contamination does not become a major factor in the sampling. The sample drillings should be combed with a magnet to remove loose iron particles but this may not remove embedded iron particles. Therefore, in the event the iron determination exceeds 0·001 percent, the analysis shall be repeated using drillings cleaned with dilute hydrochloric acid (1 : 1), followed by rinsing with distilled water and thorough drying, before weighing.

8.4 Drilling Procedure — At least one bar of each melt shall be sampled. The bar to be drilled shall be thoroughly brushed with a stiff fibre brush having bristles which are set in a non-metallic holder.

8.4.1 *Single Bar* — The bar shall be drilled in a pattern similar to that shown in Fig. 1. Three holes shall be drilled half way through the top face of the bar for the hole positions marked '*T*'. The bar shall be turned over and three holes drilled through the bottom face for the positions marked '*B*'. The bar shall be drilled while on a clean surface of a material such as polyethylene sheeting or a lint-free paper.

8.4.2 *Bars from Same Melt* — The same precautions and procedure as outlined for single bar shall be followed, except that the drillings representing the different orientation of the bar shall be made on six different bars. For example, when six bars are sampled, the sampling positions corresponding to those in Fig. 1 are used except that only one hole shall be drilled in each bar corresponding to one of the six positions.

8.5 In case of sheet, a suitable piece shall be cut from the diagonally opposite corners.



T in circle — Hole position in top of ingot.
B in dotted circle — Hole position in bottom of ingot.

FIG. 1 SAMPLE DRILLING TEMPLATE

8.6 In case of wires on spools or coils, 10 percent of the spools or coils may be selected at random. Some pieces may be cut from the ends and mixed together to form a sample.

8.7 In case of tokens, 10 percent of the tokens shall be selected at random and sample drawn by puncturing in the middle.

9. MARKING

9.1 The silver bar, sheet and token shall be suitably marked in prominent position, with the fineness, the weight and the name of the manufacturer or his trade-mark. In case of wire and granules, the containers duly sealed shall be marked in a prominent position with their fineness, the weight and the name of the manufacturer or his trade-mark.

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